What is claimed is:

1. A method of improving an angiogenesis-inhibitory effect of an anti-angiogenic serpin, or anti-angiogenic fragment thereof, by covalently linking a polymer moiety to the serpin.

2. The method of claim 1 wherein the anti-angiogenic serpin is selected from the group consisting of: PEDF, maspin, antithrombin III, angiotensinogen, headpin, and combinations thereof.

3. The method of claim 2 wherein the anti-angiogenic serpin is PEDF.

4. The method of claim 2 wherein the anti-angiogenic serpin is maspin.

5. The method of claim 1, wherein the polymer comprises a polyethylene moiety.

6. The method of claim 5, wherein the polymer comprising a polyethylene moiety is selected from the group consisting of a polyethylene glycol and a poloxamer.

7. The method of claim 6, wherein the polymer is a polyethylene glycol.

8. The method of claim 7, wherein the polyethylene glycol is sulfonyl activated.

9. The method of claim 1, wherein the polymer has a molecular weight of about 20,000 or greater.

10. A composition comprising a modified anti-angiogenic serpin, or anti-angiogenic fragment thereof, wherein the serpin or fragment thereof is modified by covalent linkage to a polymer moiety.

11. The composition of claim 10, wherein the polymer is selected from the group consisting of a polyethylene glycol and a poloxamer.

12. The composition of claim 10, wherein the anti-angiogenic serpin is selected from the group consisting of: PEDF, maspin, antithrombin III, angiotensinogen, headpin, and combinations thereof.

13. The composition of claim 12, wherein the anti-angiogenic serpin is selected from the group consisting of PEDF, maspin, and combinations thereof.

14. The composition of claim 10, wherein the polymer has a molecular weight of about 20,000 or greater.

15. The composition of claim 11, wherein the polymer is a monomethoxy polyethylene glycol.

16. The composition of claim 15, wherein the monomethoxy polyethylene glycol is sulfonyl activated.

17. A method of inhibiting a disease having a pathological angiogenic component by administering in vivo an anti-angiogenic serpin, or fragment thereof, having a covalently linked polymer moiety.

18. The method of claim 17 wherein the anti-angiogenic serpin is selected from the group consisting of: PEDF, maspin, antithrombin III, angiotensinogen, headpin, and combinations thereof.

19. The method of claim 18 wherein the anti-angiogenic serpin is PEDF.

20. The method of claim 18 wherein the anti-angiogenic serpin is maspin.

21. The method of claim 17, wherein the disease is selected from the group consisting of: diabetic retinopathy, age-related macular degeneration, rheumatoid arthritis, endometriosis, psoriasis, juvenile hemangioma, and cancer.

22. The method of claim 21 wherein the disease is cancer.

23. The method of claim 21, wherein the disease is age related macular degeneration or diabetic retinopathy.

24. The method of claim 17, wherein the polymer is selected from the group consisting of polyethylene glycol and poloxamers.

25. The method of claim 24, wherein the polymer is a polyethylene glycol.

26. The method of claim 25, wherein the polyethylene glycol is a sulfonyl activated polyethylene glycol.

27. The method of claim 24, wherein the polymer has a molecular weight of about 20,000 or greater.